AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the above-identified application:

1. (original) A vibration damping device, the vibration damping device comprising:

a) a piezodynamic damping spacer, the piezodynamic damping spacer coupled to a bearing in a momentum control device, the piezodynamic damping spacer configured such vibrations in the bearing are absorbed by the piezodynamic damping spacer and converted to electrical energy; and

b) a tuning system electrically coupled to the piezodynamic damping spacer, the tuning system providing selective control of a resonant frequency of the vibration damping device such that the vibration damping device absorbs vibrations in a selected frequency range.

2. (original) The vibration damping device of claim 1 wherein the piezodynamic damping spacer is located adjacent the bearing.

3. (original) The vibration damping device of claim 1 wherein the bearing comprises a duplex bearing pair and wherein piezodynamic damping spacer is located between the duplex bearing pair.

4. (original) The vibration damping device of claim 1 wherein the piezodynamic damping spacer comprises a ring shaped spacer having a thickness.

5. (original) The vibration damping device of claim 1 wherein the piezodynamic damping spacer comprises a piezoelectric material.

6. (withdrawn) The vibration damping device of claim 1 wherein the piezodynamic damping spacer is coupled to the bearing through an intermediate member.

7. (original) The vibration damping device of claim 1 wherein the momentum control device comprises a reaction wheel.

8. (original) The vibration damping device of claim 1 wherein the momentum control device comprises a control moment gyroscope.

9. (original) The vibration damping device of claim 1 wherein the tuning system includes an operational amplifier to implement a tunable inductor to provide the selective control of the resonant frequency.

10. (original) The vibration damping device of claim 1 wherein the tuning system includes an input to receive sensor data indicating an operational speed of the momentum control device.

11. (original) The vibration damping device of claim 10 wherein the tuning system adjusts the resonant frequency in response to the sensor data.

12. (original) The vibration damping device of claim 1 further comprising a vibration sensor circuit, the vibration sensor circuit electrically coupled to the piezodynamic damping spacer to measure vibrations in the bearing.

13. (original) The vibration damping device of claim 12 wherein the vibration sensor circuit provides a vibration frequency output to tuning circuit, the vibration frequency output proportional to a frequency of the measured vibrations in the bearing.

14. (original) A vibration damping device for reducing vibrations in a momentum control device, the vibration damping device comprising:

a) a piezodynamic damping spacer, the piezodynamic damping spacer coupled to a bearing in the momentum control device, the piezodynamic damping spacer configured such that vibrations in the bearing are absorbed by the piezodynamic damping spacer and converted to electrical energy;

b) a sensor circuit, the sensor circuit electrically coupled to at least a portion of the piezodynamic damping spacer to measure the vibrations absorbed by the piezodynamic damping spacer, the sensor circuit providing a vibration frequency output proportional to a measured frequency of the vibrations; and

c) a tuning system electrically coupled to the piezodynamic damping spacer, the tuning system receiving the sensor output and providing selective control of a resonant frequency of the vibration damping device, the tuning system adjusting the resonant frequency of the vibration damping device such that the vibration damping device efficiently absorbs vibrations in the measured frequency of the vibrations.

15. (currently amended) The vibration damping device of claim 14 ~~14~~ wherein the piezodynamic damping spacer comprises a ring shaped spacer having a thickness, and wherein piezodynamic damping spacer absorbs the vibrations by changes in the thickness.

16. (withdrawn) The vibration damping device of claim 14 wherein the piezodynamic damping spacer is coupled to the bearing through an intermediate member.

17. (original) The vibration damping device of claim 14 wherein the tuning system includes an operational amplifier to implement a tunable inductor to provide the selective control of the resonant frequency.

18. (original) A vibration damping device for reducing vibrations in a momentum control device, the vibration damping device comprising:

a) a piezodynamic damping spacer, the piezodynamic damping spacer coupled to a bearing in the momentum control device, the piezodynamic damping spacer configured such that vibrations in the bearing are absorbed by the piezodynamic damping spacer and converted to electrical energy;

b) a sensor input to receive sensor data indicating an operational speed of the momentum control device; and

c) a tuning system electrically coupled to the piezodynamic damping spacer, the tuning system receiving the sensor data and providing selective control of a resonant frequency of the vibration damping device in response to the sensor data, the tuning system adjusting the resonant frequency of the vibration damping device such that the vibration damping device efficiently absorbs vibrations created by the momentum control device at the operational speed.

19. (currently amended) The vibration damping device of claim 18 wherein <u>the</u> piezodynamic damping spacer comprises a ring shaped spacer having a thickness, and wherein piezodynamic damping spacer absorbs the vibrations by changes in the thickness.

20. (withdrawn) The vibration damping device of claim 18 wherein the piezodynamic damping spacer is coupled to the bearing through an intermediate member.

21. (original) The vibration damping device of claim 18 wherein the tuning system includes an operational amplifier to implement a tunable inductor to provide the selective control of the resonant frequency.